PATENT
Attorney Docket No. 07409-0044

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

| | | |
|---|---|---|
| In re Application of: | ) | |
| Tomoaki Mori et al. | ) | Group Art Unit: 3711 |
| Application No.: 10/537,776 | ) | Examiner: Alvin A. Hunter |
| Filed: June 6, 2005 | ) | |
| For: Golf Club and Method of Designing Hollow Golf Club Head | ) | Confirmation No.: 4882 |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

**TRANSMITTAL LETTER**

Enclosed is a reply to the Office Action of November 6, 2007. The item(s) checked below are appropriate:

☒ Applicants hereby petition for a two month extension of time to respond to the above Office Action. $460.00 for the Extension is enclosed.

The claims are calculated below:

| | Claims Remaining After Amendment | | Highest Number Previously Paid | Present Extra | Rate | Additional Fee |
|---|---|---|---|---|---|---|
| Total | 13 | - | 20 | | x $ 50 | $ |
| Indep. | 3 | - | 3 | | x $210 | |
| ☐ First Presentation of Multiple Dep. Claim(s) | | | | | +$370 | |
| | | | | | Subtotal | $ |
| | | | | | Reduction by ½ if small entity | - |
| | | | | | TOTAL | $ |

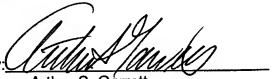
☐ $____ to cover the cost of the additional claims added by this reply is enclosed.

☐ $____ to cover _____ is enclosed.

☒ $460.00 to cover the above fee(s) is enclosed.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Dated: April 7, 2008

By: 

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## REPLY TO OFFICE ACTION

In reply to the Office Action mailed November 6, 2007, **the period for response having been extended to April 6, 2008 (a Sunday) by a request for extension of two months and fee payment filed concurrently herewith,** please amend the above-identified application as follows:

**Amendments to the Claims** are reflected in the listing of claims in this paper.

**Remarks/Arguments** follow the amendment section of this paper.

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A golf club comprising a hollow golf club head which has a face portion for striking a golf ball, a crown portion connected to the face portion, [[and]] a sole portion connected to the face portion and a side portion connected to the face portion, the crown portion and the sole portion, wherein:

a first region whose surface area constitutes 5% or more of a total surface area of the crown portion is formed by a first outer shell member in a region of the crown portion which is located along a connecting edge of the crown portion connecting to the face portion and within a distance of 50 mm from the connecting edge, and a second region whose surface area constitutes 5% or more of the total surface area of the sole portion is formed by a second outer shell member in a region of the sole portion which is located along a connecting edge of the sole portion connecting to the face portion and within a distance of 50 mm from the connecting edge of the sole portion, the first outer shell member structured by a carbon fiber reinforced plastic material and the second outer shell member structured by a metal alloy; and

when an product of an elastic modulus of the first outer shell member in a direction in which a striking surface is oriented and a thickness of the first outer shell member in the first region is taken as a first equivalent rigidity and a product of an elastic modulus of the second outer shell member in the direction in which the striking surface is oriented and a thickness of the second outer shell member in the second region is taken as a second equivalent rigidity, a ratio of either the lower of the first

equivalent rigidity and the second equivalent rigidity to the higher is equal to or less than 0.75[[.]].

wherein a side member of the side portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof,

wherein a face member of the face portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof, and

wherein the first outer shell member is joined to the extension portions from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion.

2. (Cancelled).

3. (Currently amended) A method of designing a hollow golf club head which has a face portion for striking a golf ball, a crown portion connected to the face portion, [[and]] a sole portion connected to the face portion and a side portion connected to the face portion, the crown portion and the sole portion, wherein:

a first region whose surface area constitutes 5% or more of the total surface area of the crown portion is formed by a first outer shell member in a region of the crown portion which is located along a connecting edge of the crown portion connecting to the face portion and within a distance of 50 mm from the connecting edge; a second region whose surface area constitutes 5% or more of the total surface area of the sole portion is formed by a second outer shell member in a region of the sole portion which is located along a connecting edge of the sole portion connecting to the face portion and

within a distance of 50 mm from the connecting edge of the sole portion; a product of an elastic modulus of the first outer shell member in a direction in which a striking surface is oriented and a thickness of the first outer shell member in the first region is taken as a first equivalent rigidity; and a product of an elastic modulus of the second outer shell member in the direction in which the striking surface is oriented and a thickness of the second outer shell member in the second region is taken as a second equivalent rigidity, the method comprising the steps of:

holding in advance the characteristic data that expresses changes in initial ballistic characteristics of a golf ball caused when either of the first and second equivalent rigidities is changed while the other is kept constant;

using the held characteristic data to set a ratio between the first equivalent rigidity and the second equivalent rigidity in accordance with the initial ballistic characteristics of the golf ball struck by a golfer; and

employing two members that conform to the set ratio as the first and second outer shell members[[.]],

wherein a side member of the side portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof; and

wherein a face member of the face portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof.

4. (Previously presented) The method of designing a hollow golf club head according to claim 3, wherein:

said characteristic data represents each of plural head speeds at which golfers strike golf balls;

said characteristic data is prepared for each of plural head speeds at which golfers strike golf balls; and

said ratio is set according to a head speed at which a golfer strikes golf balls.

5. (Previously presented) The method of designing a hollow golf club head according to claim 3, wherein:

said characteristic data represents each of plural loft angles of golf clubs;

said characteristic data is prepared for each of plural loft angles; and

said ratio is set according to a loft angle of the golf clubs.

6. (Previously presented) The method of designing a hollow golf club head according to claim 4, wherein:

a composite material in which a fiber reinforced plastic material is laminated is used for said first outer shell member and a metal alloy for said second outer shell member; and

said ratio is established by regulating an orientation angle of the composite material.

7-8. (Cancelled).

9. (Previously presented) The golf club according to claim 1 , wherein:

the face portion is structured by a metal alloy.

10. (Currently amended) A golf club comprising a hollow golf club head which has a face portion for striking a golf ball, a crown portion connected to the face portion,

[[and]] a sole portion connected to the face portion and a side portion connected to the face portion, the crown portion and the sole portion, wherein:

a first region whose surface area constitutes 5% or more of a total surface area of the crown portion is formed by a first outer shell member in a region of the crown portion which is located along a connecting edge of the crown portion connecting to the face portion and within a distance of 50 mm from the connecting edge, and a second region whose surface area constitutes 5% or more of the total surface area of the sole portion is formed by a second outer shell member in a region of the sole portion which is located along a connecting edge of the sole portion connecting to the face portion and within a distance of 50 mm from the connecting edge of the sole portion, the face portion being structured by a metal alloy; and

when a product of an elastic modulus of the first outer shell member in a direction in which a striking surface is oriented and a thickness of the first outer shell member in the first region is taken as a first equivalent rigidity and a product of an elastic modulus of the second outer shell member in the direction in which the striking surface is oriented and a thickness of the second outer shell member in the second region is taken as a second equivalent rigidity, a ratio of either the lower of the first equivalent rigidity and the second equivalent rigidity to the higher is equal to or less than 0.75[[.]],

wherein a side member of the side portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof.

wherein a face member of the face portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof, and

wherein the first outer shell member is joined to the extension portions from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion.

11. (Previously presented) The golf club according to claim 10, wherein:

the golf club is included among a series of golf clubs adapted for different head speeds; and a composite material in which a fiber reinforced plastic is laminated is used for either or both of the first and second outer shell members, having an orientation angle of fibers thereof regulated according to a head speed so as to establish said ratio.

12. (Previously presented) The golf club according to claim 10, wherein:

the golf club is included among a series of golf clubs with different loft angles; and a composite material in which a fiber reinforced plastic is laminated is used for either or both of the first and second outer shell members, having an orientation angle of fibers thereof regulated according to a loft angle of the golf club so as to establish said ratio.

13. (New) The golf club according to claim 1, wherein:

the second equivalent rigidity is lower than the first equivalent rigidity.

14. (New) The method of designing a hollow golf club head according to claim 3, wherein:

the first outer shell member is joined to the extension portions from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion.

15. (New) The method of designing a hollow golf club head according to claim 3, wherein:

the second equivalent rigidity is lower than the first equivalent rigidity.

16. (New) The golf club according to claim 10, wherein:

the second equivalent rigidity is lower than the first equivalent rigidity.

## REMARKS

In response to the above Office Action, claims 1 and 10 have been amended to include the following features:

1) the golf club head has a side portion connected to the face, crown and sole portions;

2) a side member of the side portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof;

3) a face member of the face portion has an edge which is bent to a side of the crown portion to provide an extension portion extending in the crown portion to form a part thereof; and

4) the first outer shell member is joined to the extension portions from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion.

In addition, claim 3 has been amended to include features 1) - 3).

Support for feature 1) can be found on page 13, lines 8-16 of the specification.

Support for features 2) and 3) can be found on page 13, line 17 to page 14, line 1 of the specification and support for feature 4) in Figure 1.

In the Office Action, the Examiner rejected claims 1, 3, 6, 9 and 10 under 35 U.S.C. §103(a) for being obvious over Lee (U.S. 2003/0186760) in view of Kouno (US 2003/0013548.

However, Lee does not describe any extension portion of the side portion as claimed. Further, the fiber wall 35 in Lee is formed by resin-impregnated fiber sheet and integrally forms a crown with the side. Accordingly, Lee does not provide any

extension portion extending in the crown portion by bending an edge of a member of the side portion and the face portion to a side of the crown portion and forming a part of the crown portion. Furthermore, Lee forms the crown integrally with the side and thus does not join the first outer shell member to the extension portions of the side portion and the face portion.

While Kouno describes an extension portion in the face portion of the golf club head, it does not show any extension portion in a side portion.

Moreover, Kouno does not disclose that the first outer shell member is joined to the extension portions of the side portion and the face portion from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion.

In view of this, it is submitted that it would not have been obvious from Lee and Kouno to have an extension portion of the side portion and join the first outer shell member to the extension portions of the side portion and face portion from the outside of the hollow region.

Furthermore, neither Lee nor Kouno disclose the claimed "equivalent rigidity" defined by a product of an elastic modulus in the direction in which a striking surface is oriented and a thickness nor the relationship between the equivalent rigidities of the sole portion and the crown portion as set forth in the independent claims.

Accordingly, it is submitted that neither claim 1 or claim 10 or claim 9 dependent from claim 1 are obvious over this cited combination of references.

Regarding claim 3, it is believed this is also not obvious in view of Lee or Kouno for the same reasons expressed above except for the argument that the "first outer shell

member is joined to the extension portions from an outside of the hollow region," because this is not a limitation of claim 3.

Regarding claim 6, it is not understood why this is included in the rejection because it depends from claim 4 and claim 4 has not been included in the rejection. In any event, claim 6 ultimately depends from claim 3, so even if claim 4 was mistakenly excluded, it is not believed to be obvious for the same reasons expressed above with respect to claim 3.

In addition, claims 3-5, 11 and 12 were rejected over Lee in view of Kouno and Davis. However, it is believed claim 3 and claims 4-5 dependent therefrom and claims 11 and 12 dependent from claim 10 are patentable for the same reasons expressed above, because Davis does not show what is missing in Lee or Kouno and is set forth in claims 3 and 10, namely, the extension portion of the side portion and the extension portion of the face portion.

New claim 14, dependent on claim 3, includes the limitation that "the first outer shell member is joined to the extension portions (of the side portion and face portion) from an outside of a hollow region formed by the face portion, the crown portion, the side portion and the sole portion." None of Kouno, Lee and Davis show joining the first outer shell member to the extension portions of the side portion and face portion from outside of the hollow region. Accordingly, it is believed claim 14 is patentable over the cited references.

Finally, new dependent claims 13, 15 and 16 define that the rigidity is lower in the sole portion than the crown portion. Neither of Lee nor Kouno describes or suggests

that the rigidity is lower in the sole portion than the crown portion. Accordingly, it is believed claims 13, 15 and 16 are also patentable over the cited references.

It is believed claims 1, 3-6 and 9-16 are in condition for allowance.

It is noted that the Examiner has not returned an acknowledged copy of the Information Disclosure Statements filed August 13, 2007 or October 31, 2007. It would be appreciated if the Examiner would do so in his next communication. Also that the Replacement Drawing filed June 6, 2005 has been received and is accepted.

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this Response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: April 7, 2008

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